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Motivation and Behavioural Patterns of Students Accessing a Peer-Facilitated Support for Learning Program

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Abstract

This paper describes the development and use of personas, a Human Computer Interaction (HCI) research methodology, within the STIMulate peer learning program, in order to better understand student behaviour patterns and motivations. STIMulate is a support for learning program at the Queensland University of Technology (QUT) in Brisbane, Australia. The program provides assistance in mathematics, science and information technology (IT) for course work students. A STIMulate space is provided for students to study and obtain one-on-one assistance from Peer Learning Facilitators (PLFs), who are experienced students that have excelled in relevant subject areas. This paper describes personas – archetypal users - that represent the motivations and behavioural patterns of students that utilise STIMulate (particularly the IT stream). The personas were developed based on interviews with PLFs, and subsequently validated by a PLF focus group. Seven different personas were developed. The personas enable us to better understand the characteristics of the students utilising the STIMulate program. The research provides a clearer picture of visiting student motivations and behavioural patterns. This has helped us identify gaps in the services provided, and be more aware of our assumptions about students. The personas have been deployed in PLF training programs, to help PLFs provide a better service to the students. The research findings suggest further study on the resonances between some students and PLFs, which we would like to better elicit.

Peer assisted student mentoring services are recognised as a critical component to higher education services in assisting with student retention and student academic success (Asmar & Peseta, 2001; Carmichael, 2003; Peel & Powell, 2000). Australian higher education institutions have developed strong peer mentoring services, such as Peer Assisted Student Sessions (PASS) at the University of Wollongong and Student Learning Advisor Mentors (SLAMs) at the Royal Melbourne Institute of Technology, in order to enhance student academic outcomes (Asmar & Peseta, 2001). STIMulate, a support for learning program at the Queensland University of Technology (QUT), is one such program. STIMulate is an acronym combining mathematics, information technology, science, the program provides assistance for skills development in the maths, science and information technology (IT) disciplines.

STIMulate has established a sustainable, and increasingly inclusive, peer-facilitated support for learning program for maths, science and IT (Weatherill, Wilson, Russel, Medland, & Devine, 2013). Since its inception in 2013, STIMulate has recorded visitation from 8447 students (QUT, 2014). In 2014, 117 PLFs provided support to 1178 students, totalling 3630 visits (QUT, 2014). The average visits-per-student was 2.2, with GPA 3.5 students; students of low to medium achievement, visiting most frequently.

The STIMulate service includes independent study spaces, drop-in assistance, group support sessions, and online and physical resource sheets. Students supported through the drop-in services (one-on-one consultations to assist with specific topics) are predominately assisted by Peer Learning Facilitators (PLF). PLFs are experienced students, who have completed a

minimum of 96 credit points (two full-time four unit semesters) with a grade point average of at least 6.5.

The STIMulate program operates in a multi-use student space comprised of two sections: a study space for students and PLFs, containing large mobile tables, computers and couches (Figure 1(a)), and a section dedicated to PLF drop-in assistance space for students, consisting of desks and laptops (Figure 1(b-c)). This dual purpose room affects the way in which PLFs and students interact, and will be discussed in later sections of this paper.



Figure 1: The STIMulate Space – (a) Study Space and (b-c) Drop-In Assistance Space

While useful, the visitation data captured by STIMulate provides us with little information on the motivations and behavioural patterns of visiting students. Further investigations of these aspects are crucial to ascertain whether the current level, and style, of assistance is appropriate for students requesting help and to encourage continuing use of the program. Our research identified existing gaps in the service provided by STIMulate, by understanding the motivations and behavioural patterns of the students who use the drop-in service provided by the IT PLFs. Developing personas (Cooper, 2004; Nielsen, 2012) was proposed to achieve the research aims.

Personas are fictitious characters that represent the needs of a group or subset of target users (Pruitt & Adlin, 2006), that have distinct motivations and behavioural patterns (Cooper, 2004; Nielsen, 2012). Personas *do not* illustrate real individuals, but provide specific and concrete representations of target users (Rogers, Sharp, & Preece, 2011). Personas are a powerful tool to view STIMulate from a student perspective. They provide an insight into existing gaps in the services provided by STIMulate. We intend to use the insights yielded to develop new ways to fill these gaps, to improve service quality, as well as training for our growing team of volunteers.

Personas have grown from being an integral part of user studies in human-computer interaction (Nielsen, 2012, 2014,) and interaction design (Rogers et al., 2011, Grudin & Pruitt, 2002) to being useful in many other contexts. These include the development of products, marketing, planning of communication, and service design, helping to define product features, increasing the focus on users and their needs, having users directly influence design, being an effective communication tool and leading to better design decisions (Cooper, 2004; Cooper, Reimann, & Cronin, 2007; Ma & LeRouge, 2007; Miaskiewicz & Kozar, 2011; Pruitt & Adlin, 2006). However, the use of personas in the teaching and learning field has been limited, with Bilandzic and Foth (2013) using personas to understand the social learning of users in libraries, Barbour and Marshall (2012) using personas of academics to explore new digital communication environments, and Phuong and

Shimakawa (2015) using the methods to understand student motivations and behaviours in a programming course.

In this paper we propose to develop personas of students who use the drop-in services provided by IT PLFs to identify existing gaps in the service provided by STIMulate, though understanding the motivations and behavioural patterns of the students. This research focused on the IT stream of the program as the use of traditional support aids, such as whiteboards and worksheets in math skills support has not been effective for the IT stream to date. Moreover, there was an uneven and higher demand for support of specific IT skills in the most recent semesters – the highest number of student visits in Semester 2, 2014 from Science and Engineering Faculty students. Understanding the motivations and behavioural patterns of the students who access IT skills support at STIMulate enables a critical analysis of the style, and level of support that is appropriate for students seeking help to develop their IT skills.

Data Collection

Personas were identified based on semi-structured interviews (Beyer & Holtzblatt, 1997, Rogers et al., 2011) with PLFs. Five academics from the STIMulate program were involved in the design and development of the interview questions. Academic 1 and Academic 2 (from the team of five academics who developed the interview questions) conducted the interviews.

The questions chosen in the interview protocol were developed in order to better understand the dynamics of student and PLF interaction, focusing on behavioural patterns and forms of assistance rendered to the student. This first round of interviews focused on the following key topics:

- Examples of students the PLF helped recently, focusing on help provided, common areas of aid provided, and how many students the PLF helped.
- Length of help sessions and any significant issues that arose.
- Recollection of how the student arrived at STIMulate (referral, learning guide, website etc.)

In this instance, formal research ethics approval was not required, as the primary purpose of our study is teaching and learning quality assurance, and as a result does not require university human research ethics review, approval and monitoring. The study was, however, conducted in strict accordance with the National Statement, university policies and legislation.

Interviewees were experienced PLF's who had volunteered for at least two semesters. Food vouchers were offered and interviews were audio recorded for later transcription. After six PLFs (two female and four male, aged 19 to 40) were interviewed, the observations and reports from the PLFs began to converge and overlap, providing a consistent picture of the different motivations and behavioural patterns of the students who were accessing STIMulate.

Based on these initial interviews, personas were developed by Academic 1, Academic 2, Academic 3 and Academic 4 in a workshop. During the workshop, it emerged that some specific information required to describe the personas were not available. The research team then decided to conduct a second round of interviews to elicit more information about the personas. Academic 1 and Academic 2 designed and developed the second set of interview

questions, and interviewed a further four (two female and four male, aged 19 to 35) PLFs.

The second round of interviews was developed in a fashion as to build up from the first interview protocol. In this instance the key outcomes sought after were:

- Factors that may have caused delays in the help offered (technical issues, conflicting skills, communication barriers).
- PLF thoughts on student expectations, both of the PLF and of the service.
- Scenarios where the PLF struggled to engage the student, with an emphasis on positive, neutral, or negative behaviour.

The initial personas were subsequently revised in another workshop by the four academics (Academic 1 – Academic 4) that initially developed the personas. As a final confirmatory step, a focus group of a further seven PLFs (two female and five male, aged 19 to 40) was assembled to validate the personas. The focus group was facilitated by Academic 1 and Academic 2. As validation was the key aim for the focus group, the questions asked revolved around the following:

- PLF interactions with the personas developed. An exploration of any narratives that may have emerged.
- Frequency of interaction with the personas developed, as well as accuracy of representation.
- Potential overlapping behaviour traits and motivations of the personas.

Personas

Based on user interviews, seven personas were developed: *Learner Lynn*, *High Achiever Harley*, *Last Minute Lee*, *No Work Noor*, *Familiar Fran*, *Low Confidence Lane* and *Shy Sydney*. To aid the discussion the Learner Lynn persona is shown in Figure 2 below. All personas use the same template with adjustments made relating to their differing behaviours and attributes.

Persona 1: Learner Lynn

Learner Lynn is self-motivated student who attempts to understand the underlying principles of her studies, rather than to just complete an assessment. Lynn studies independently, either in the STIMulate study space or elsewhere, getting assistance from PLFs when required. Lynn expects that STIMulate will provide a good study environment for her. PLFs will most often have a positive interaction with Lynn (Figure 2).

Persona 2: High Achiever Harley

High Achiever Harley is motivated by high marks, rather than understanding a concept. This persona can be seen as a sub-persona of Learner Lynn.

Harley will work diligently to achieve the maximum mark and will come to STIMulate to ensure that his work is of the highest quality. Harley usually requires a second opinion on their assessment, as he lacks the ability and/or the confidence to judge the quality of their own work, even though they may come across as confident. Harley has a high expectation

that the PLFs will be able to help him to ensure that his assignment will get the maximum mark. Harley may return to double check the next assessment.

High Achiever Harley may not spend a lot of time in STIMulate as he only needs help in specific areas (Figure 3). PLFs usually have positive interactions with this persona (Figure 3).

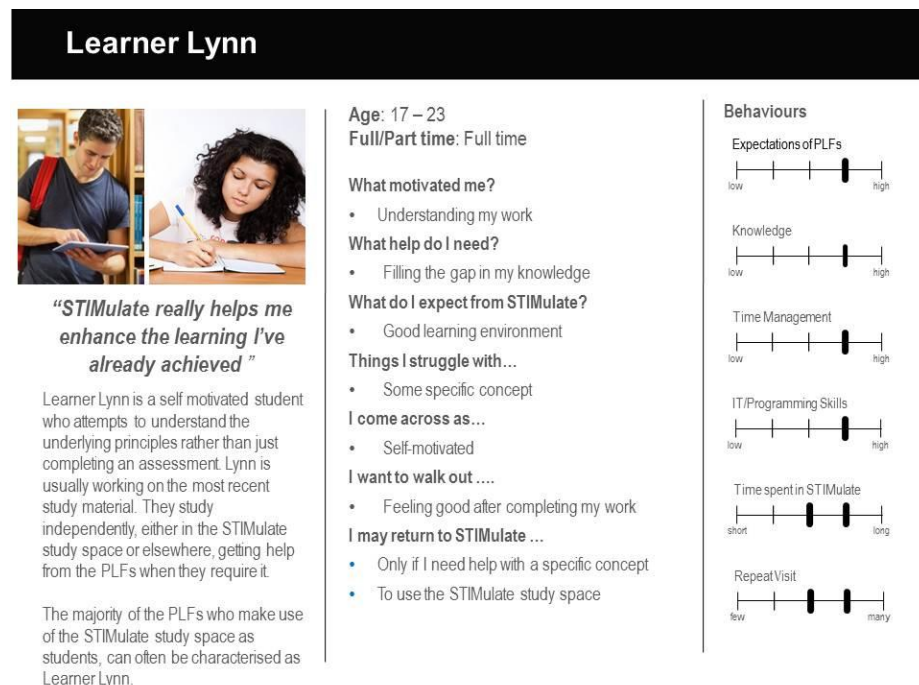


Figure 2: Persona Example – Learner Lynn

Persona 3: Last Minute Lee

Last Minute Lee is motivated by the deadline of an assessment, often only partially completing their work and requiring last minute assistance. She has a high expectation that there will be an expert at STIMulate to help her immediately (Figure 3).

Lee may have negative interactions (Figure 3) with PLFs as she is often hurried and stressed, due to poor time management. Lee will return to STIMulate if time is running out to independently complete her next assessment.

A small handful of Last Minute Lees may change behavioral patterns and come in advance to request help, once they have learned that PLFs with different areas of expertise are only timetabled at specific times throughout the week. This may transition Lee to a Familiar Fran persona.

Persona 5: No Work Noor

Similar to Last Minute Lee, No Work Noor is motivated to complete his assessment. However, as the name denotes, No Work Noor is a student who has not done any work on their assessment. As such, No Work Noor is often seen as a lazy student who attempts to get others to do their work for him.

Some No Work Noor's struggle with the motivation to start assessment, as he may not understand first principles. Noor is always seeking assistance, and while he thinks that by asking for help and being present when help is given, he is doing his own work, in reality, No Work Noor just wants someone else to do the work for him as he don't understand the basic principles required to complete it.

At critical times, No Work Noor will spend a lot of time in the STIMulate independent study space, approaching one PLF after another, in an attempt get PLFs to complete his assessment (Figure 3). Noor can come across as pushy or manipulative, causing his interactions with PLFs to become negative (Figure 3). Noor may return to STIMulate if he finds a PLF who will him them complete his assessment.

Persona 4: Familiar Fran

Familiar Fran is a purposeful student, motivated to seek help from a specific PLF, who repeatedly visits STIMulate (Figure 3). These repeat visits can be attributed to knowing that the PLF is an expert in a relevant area, and having built rapport with the PLF. It is the rapport between the visiting student and PLF that leads to these interactions being classified as positive (Figure 3).

However, when Familiar Fran misuses the rapport she has built with a PLF, the interaction becomes negative. This can happen for two reasons:

- Fran attempts to seek help from the PLF outside the STIMulate environment.
- Fran does not accomplish much work on her own and expects the PLF to complete it for her (similar to No Work Noor persona).

Persona 6: Low Confidence Lane

Similar to Learner Lynn, Low Confidence Lane is motivated to better understand a concept, but unlike Lynn, has low self-confidence. Lane is usually unsure of his abilities and may need help understanding first principles. This is possibly because Lane is a mature aged student returning to study after a long absence from any educational institution. PLFs often walk through the material to enable Lane to build his confidence. Some Low Confidence Lanes may have a disability and thus be unsure of their abilities in a new environment (such as the higher education environment).

Lane may return to STIMulate regularly (Figure 3) if he gets what he deems to be useful help. Lane is very appreciative of the help provided, usually having positive interactions with PLFs (Figure 3).

Persona 7: Shy Sydney

Shy Sydney is interested in receiving help (either with a concept or assessment), but is uncomfortable in a crowd and prefers a quiet environment. Sydney may say she understands a concept even when she does not in order to avoid further interaction in the potentially crowded STIMulate space.

Shy Sydney appears timid, but is very appreciative of the help given by the PLFs, having positive interactions with PLFs (Figure 3). Sydney may return to STIMulate repeatedly if she can attend a quiet one-on-one session (Figure 3).

If Shy Sydney is from a culturally different background, or from a single-gender school, she may prefer help from PLFs of the same gender. This is not uncommon with the Shy Sydney persona or any students with a history of single-gender interactions (Andrews, Hanish, Fabes, & Martin, 2014).

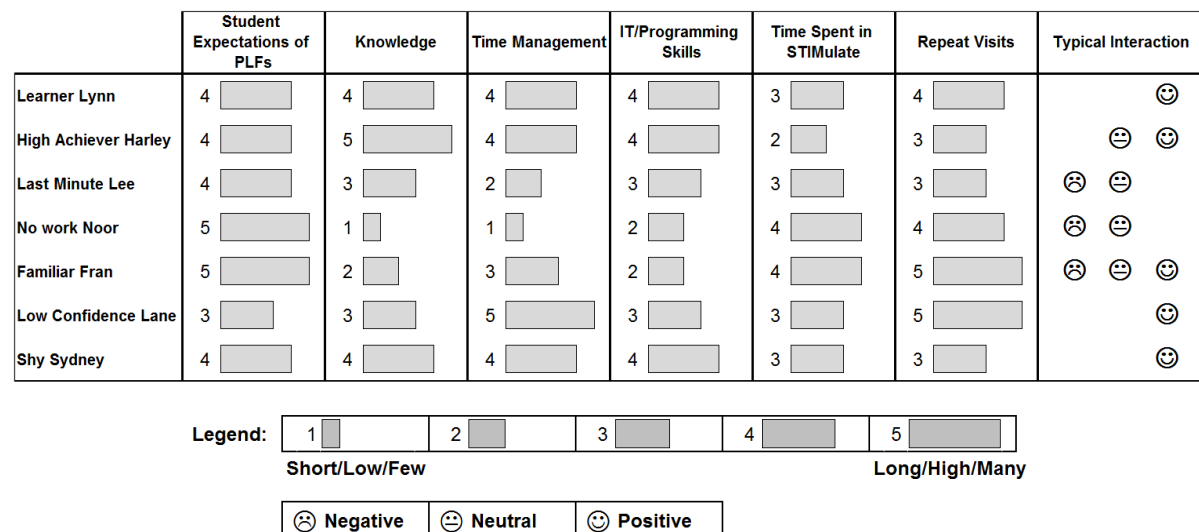


Figure 3: Behavioural Patterns of Personas that Access the STIMulate IT Drop-In Service

Discussion

The personas described above were developed based on interviews conducted over two-rounds with PLFs, and a focus group consisting of PLFs. The interviews allowed the researchers to gain a deeper understanding of the students who access the STIMulate IT drop-in service, while the focus group helped to validate the personas.

Although personas can be misinterpreted as stereotypes (Nielsen, 2012), they are in fact composite archetypes based on information about real students, compiled from interviews.

While different in outlook and general design, these personas offer greater insight than general learning traits and student outlook. There has been evidence of persona building in previous teaching and learning literature (Biggs, 1999), however these have not been aligned with peer programs and focus on teaching methods. Looking at whether students fall into the categories of deep, surface and strategic learners is only one part of what we have uncovered in our peer-learning students (Ramsden, 1992). The personas created offer insight into student behaviour patterns and motivation, which helps us understand not just learning perspectives, but underlying areas that may be addressed to increase student motivation, retention and knowledge. What this paper has provided is background contextual information, which personas have been able to provide in depth.

Looking further at the studies undertaken, personas describe the motivation and behavioural patterns of students based on observational data. Our creation of multiple, in depth personas has, if anything, corrected certain stereotypes in the STIMulate space, giving a three-dimensional quality to personas that may otherwise have been misconstrued. For example, a classic stereotype is *students do not do their work because they are lazy and like to party* but our research identifies that *some students lack motivation to do their own work as they do not understand first principles*.

Behavioural Pattern Findings

Analysing the interviews and subsequently creating personas unearthed relevant motivations and behavioural patterns of students. The qualitative results of these efforts have given the STIMulate team interesting insight into student expectations of PLFs, their IT skill sets, interactions with PLFs and time management.

Student Expectations of PLFs

Six of the seven persona types who regularly enter the STIMulate space have high expectations of PLFs (Figure 3). These expectations include PLFs having a high level of subject knowledge and the ability to provide assistance efficiently. The only exception is Low Confidence Lane, who has average expectations of PLFs. This may be due to their low level of self-confidence.

Subject Knowledge and Time Management

The personas have a range of subject knowledge levels and time management skills (Figure 3). It is noted that many of the higher achieving personas, such as High Achiever Harley and Learner Lynn, have both strong time management skills, and high levels of subject knowledge. The opposite can be said for the persona categories that appear to struggle with content and time management, such as No Work Noor or Last Minute Lee (Figure 3). These lower scores may be attributed to those personas having difficulty understanding first principles, thus falling behind in their workload.

IT/Programming Skills

No Work Noor and Familiar Fran appear to have the lowest IT related skills. In No Work Noor's case, this can be attributed to difficulty with first principles, leading them to avoid attempting to do their own work. Consequently, this leads to low IT/programming skills. Familiar Fran's low programming skills are tied to their high number of repeat visits to the STIMulate Space. It is this attribute that brings No Work Noor and Familiar Fran back to seek more assistance.

Time Spent in the STIMulate Space

Many persona types spend a moderate amount of time (from 30 to 90 minutes) in the STIMulate Space (Figure 3). This time spent may be split between the study space and the PLF assistance area. Interestingly, the STIMulate space can prove to be positive or detrimental depending on the student persona. Shy Sydney for example, will find the sometimes busy area of the STIMulate space difficult to work in, whereas more sociable persona types such as Learner Lynn will enjoy the dual function of the shared study space and the PLF assistance area.

It is interesting to note that personas with a low level of subject knowledge (No Work Noor and Familiar Fran) spend more time in the STIMulate space (Figure 3), while personas with a high level of subject knowledge (High Achiever Harley) spend less time. This may relate to the type of assistance sought, however it may also relate to an increasing feeling of belonging of the student.

Number of Repeat Visits

The number of repeat visits expected is high across all the persona types (Figure 3). This may be attributed to the current success of the program.

General Interactions with PLFs

There are greater numbers of positive interactions with PLFs than neutral or negative interactions (Figure 3). Additionally, there is a natural tendency for the higher achieving persona types to fall into the positive interaction section, whereas students who tend to do less work on their own, or come in at the last minute may fall into the neutral or negative categories.

The above behavioural pattern findings indicate the success and impact on students of the current STIMulate program. This can be attributed to the sizable number of repeat visits, positive general interactions with the PLF's, as well as high of expectation of our PLF's. These personas have also helped identify potential "at risk" students. The persona types of No Work Noor and Last Minute Lee have been found to have behavioural and motivational issues which can impact their academic development. Additionally, the Shy Sydney persona has helped us realise the importance of quiet and gender aware study support. The personas, as well as the research we have undertaken, have helped uncover this data about the STIMulate service.

Other data from our research has helped STIMulate to obtain a deeper understanding of the students using the drop-in service and assisted in providing an insight into existing gaps in the services provided. We intend to use these to develop new ways to fill these gaps in the future. For example, based on needs of Shy Sydney, since Semester 1 2015, the STIMulate program now offers more private one-on-one quiet drop-in sessions in the library.

Personas created as a result of this study have been deployed in STIMulate PLF training programs, in order to inform new PLFs on how to prepare for the majority of students who will likely visit for assistance. Common motivations, behavioural patterns and interactions are identified earlier and as a result, create a better level of understanding and preparedness for upcoming PLFs. Using Personas with PLFs in training hope to further empathy, engagement, and identification with the students to understand their point of view. In addition, the research suggested certain resonances between some students and PLFs. This may be due to factors such the expertise, learning modes or familiarity and further study of this may help determine the reasons for these resonances, to enable us to better elicit them in the future.

We believe that the pioneering use of persona methodology in peer learning has provided STIMulate with a range of detailed qualitative data. The HCI method of better understanding users, or in our context students, has translated successfully into better understanding the STIMulate space, PLFs and students. This can be attributed to the positive confirmation of our persona types by the majority of interview participants, many who identified these personas as students PLF's engage with in the STIMulate space. This research hopes to illustrate the potential benefits of using personas within peer-learning programs, in order to draw a better understanding of the range of motivations and behaviour patterns that exist with both students and PLFs.

Conclusion

The aim of this research was to identify gaps in the service provided by STIMulate, by understanding the attitudes and motivations of the students who use the drop-in service provided by the IT PLFs. Based on interviews, seven personas were developed to describe the attitudes and motivations of visiting students seeking assistance with IT skills and concepts. The personas provided insight into the existing issues within the STIMulate service and have provided a fresh look alternative ways which learning and teaching units can utilise behaviour and motivation capturing methods from external disciplines. This pioneering use of personas will hopefully be further expanded upon as STIMulate seeks to better improve its student services, as well as better understand the student/PLF dynamic. Our findings will be used in future work to critically analyse how support for IT concepts and skills are provided, as well as to improve service quality.

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